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THE INTERNATIONAL CLOUD ATLAS.*

DURING the last quarter of a century, many thousands of photographs of the clouds have been taken by dozens of experts. We did think of enumerating some of the best known workers, but the list would be too long, and would go nearly through the alphabet from Abercromby to Wilson-Barker—perhaps even before the one and after the other—so we desist. We naturally expect to see some result from all this work, and cloud literature is growing proportionally.

The publication now before us has, therefore, to reach a very high level in order to occupy a position worthy of the auspices under which it appears, and of the year in which it is published. Some day, some one will, we hope, give a chronological list of all published works on, and illustrations of, cloud formation. We can here take only a few, and, turning them over, state our impressions of the *International Atlas* in comparison with each.

First, of what may be called the modern publications, is M. Weilbach's *Nordeuropas Skyformer* (Copenhagen, 1881), and we are very glad to see that fourteen years later M. Weilbach was elected as a member of the committee to which we are indebted for the new atlas now before us. He can hardly fail to be gratified at the progress which has been made along the lines which he laid down.

About ten years later, came the *Wolken Atlas* (1890) of Drs. Hildebrandsson, Köppen and Neumayer. Had there been more blue and less brown in the colouring of this atlas, it would, we think, have been better received than it was—the forms on some of the plates are very good. Plate 1 (Cirrus) seems to us better than anything in the new atlas. Plate 5 (Alto Stratus) is reproduced in the new atlas as Fig. 7. Plate 9 (Cumulo Nimbus) and its equivalent Fig. 23 in

* The International Meteorological Committee.—International Cloud Atlas, published by order of the Committee by H. Hildebrandsson, A. Riggenbach, L. Teisserenc de Bort, members of the Clouds Commission. Paris: Gauthier-Villars, 1896. 4to, 31 pages; 14 sheets of coloured maps.

the new atlas, each seems to us damaged by the characteristic tone of the respective atlasses. Plate 9 is too grey and Fig. 23 too blue—the forms agree very well. Plate 10 (Stratus) is, we think, better than its equivalent, Fig. 28—we do not know whence the latter gets the colour of the sea. The rest of the illustrations are, we think, all surpassed in the new atlas.

Third in the series comes the *Wolkentafeln* of Dr. Karl Singer (1892), who, like M. Weilbach, has been assisting in the issue of the new atlas. These were all from photographs, and the reproduction was well done. Some are reproduced in the new atlas, and the others are supplanted by better ones.

Fourth, appeared the *Classificazion delle Nubi*, issued in 1893 by the Specola Vaticana, under the direction of Padre Denza, and illustrated by the excellent reproductions of some of Signor Mannucci's photographs. This beautiful work is unique in one respect, viz., that it is not a collection of photographs by various artists, but it gives solely those taken at the observatory at the Vatican. We are sorry that not one of these has been adopted for the new atlas, as whether their nomenclature be or be not perfect, there is, we think, no doubt that several are extremely typical and true to nature, *e.g.*, Tav. viii., Strato-Cumoli 2, and Tav. xi., Nembi 2.

Fifthly and lastly, we come to the work of one who has but lately gone from us—Clement Ley's *Cloudland*, 1894. The coloured illustrations, though probably costly, do not seem to us truthful or happy, but the small reproductions of some of Mr. A. W. Clayden's photographs are very charming. We prefer his Cumulo Nimbus (pp. 87 and 89) to the Figs. 18 and 22 in the new atlas; but doubtless the opinion of the distinguished experts whose work we are noticing is preferable to ours.

And now for a few words in conclusion.

The atlas is very lovely and very cheap; we can, therefore, strongly recommend our readers to procure a copy. In the early plates the sky is more blue than we generally get in London, but that is our misfortune, not the fault of the atlas.

We think that in another edition the paper upon which the plates are printed should be stiffer; these, we fear, will not stand hard use.

We are not sure that the changes of style between several of the plates are advantageous; *e.g.*, an Alto Stratus Fig. 7 is not necessarily brown, nor we believe is a Strato-Cumulus necessarily a night cloud.

Although not one of the 28 reproductions of clouds is from an English photograph, our countrymen may well be content to see how largely the International System of 1896 is based upon the work of Howard, and that the classification adopted is that of the joint work of Dr. Hildebrandsson and their own countryman, the Hon. Ralph Abercromby.

THE WORST GALE OF THE 19TH CENTURY IN THE ENGLISH MIDLANDS.

To the Editor of the Meteorological Magazine.

SIR,—The following notes as supplemental to your report in the May and June numbers may be worth consideration.

I travelled to Ramsgate on the afternoon of March 23rd. From Faversham onwards heavy banks of cloud, rolling over the hills from the Channel, already indicated coming trouble; though over the Thames Estuary and to the north all was bright and clear.

The night was quiet, with a little drizzling rain. At 9 a.m. it was perfectly calm. Soon afterwards the wind suddenly rose from S.W., and by 11 as high a sea was running up Ramsgate Pier as I have ever seen there in many years.

I had occasion to go to Upper Deal, and for want of train service had to drive to Minster. It was as much as we could do to get there in the teeth of the wind. There at noon the storm was raging across the flats of the Stour Valley. I arrived by train at Deal at 12.30, and from then till 1 p.m. the gale was at its height. It took me that half-hour to walk the mile to Upper Deal, struggling with the wind and barely keeping my feet, and sometimes blown against a wall and drenched with rain.

By 1.30 the sun burst out, by 2 p.m. all was calm, and there was no return of the gale. In the quiet of a bright spring afternoon I returned to Ramsgate by 4 p.m., noting on my way trees uprooted and havoc in the farmsteads; but having to return to London that night, I had no time to ascertain details.

Comparing these facts with your map facing p. 65, is is plain that my storm was, though parallel to, well in advance of the Midland gale. While I was experiencing the height of the former at Deal, the latter had only reached Bristol; or, measured parallel to your axis, was 140 miles behind; or, expressed in time, my storm reached the longitude of Cambridge, measured in the same way, 2 hours before the other.

Obviously, therefore, they were quite distinct; but it would be interesting to know whether there was a similar earlier storm on the north side of the main axis; so that the Midland gale might be attributed to the filling up of a vacuum caused by the two precursors.

I note that you have not been supplied with the time of the happening of the damage reported from Shropshire and Staffordshire.

A fortnight later I was at Malvern, and saw the damage spoken of by Mr. Pringle on p. 68. The path of the blast that did the mischief was quite apparent. In a direct line, not appreciably differing from a parallel to that of the "path" on your map, it shot downwards from the summit of the Worcestershire Beacon (1,395 ft.) to a belt of trees near the bottom of Rushy Valley (755 ft.), through which it cut a track, several trees being broken off short about 6 ft. or 8 ft. above the ground; and then it fell on the Priory Church

and Knotsford Lodge (400 ft.). The summit of the Beacon is, measured horizontally, 3,000 ft. from the Priory, so that the wind was deflected downward at an inclination of 1 in 3, or an angle of 18°. Measurements to the belt of trees give the same results.

Yours obediently,

JAMES G. WOOD.

115, *Sutherland Avenue, W. July 4th*, 1896.

THE SPRING DROUGHT OF 1896.

DURING the last two or three months there has been much talk of drought, but as at the end of May it was at its greatest intensity, we left its consideration until the June returns were received.

It is frequently difficult to obtain by ordinary methods a just appreciation of natural phenomena, and we have had considerable difficulty in arriving at a clear idea of, and in exhibiting in tabular form, the intensity of the drought. One reason of this is given in a remark of the veteran observer, Mr. Southall of Ross: "We have had two periods of partial drought, with a period of 45 days slightly below average, between them." Normally, we should have expected the period dividing two droughts to have more than the average fall. Again, in working with the records for the half-year, the two-month periods, January and February and April and May, were dry, but not unprecedentedly so, and were separated by a wet March, and followed by a June of irregular amounts, but generally wet, except over central and western England.

In preparing the following table, 28 stations were selected for their fair geographical distribution over the kingdom, and should therefore give reliable results for the country generally.

Dealing first with the rainfall of the half-year, we see that at eight out of the sixteen English and Welsh stations the total fell below 67 per cent., or two-thirds of the average, the lowest values being 48 per cent. at Haverfordwest, Pembroke, 52 per cent. at Orleton, Worcestershire, 55 per cent. at Weymouth, and 56 per cent. at Hesley Hall, Notts, while at Bury St. Edmunds the fall was 10 per cent. above the average. In the *Met. Mag.* for July, 1895, we showed that the rainfall of the driest first six months should be about 50 per cent. of the average; the above-mentioned stations therefore show a six months' drought of extreme severity, but the average of the whole 16 stations shows a deficiency of only 30 per cent., an amount by no means phenomenal.

Div.	Station.	First Half of Year.			April & May.		
		Average	1896		Average	1896	
			Total.	% of Aver		Total.	% of Aver
		in.	in.		in	in.	
I.	London, Camden Square	10·76	7·24	67	3·64	·69	19
II.	Alton, Ashdell	13·60	10·81	79	4·16	·71	17
III.	Winslow, Addington.....	11·57	7·36	64	4·02	1·14	28
IV.	Bury St. Edmunds, Westley..	9 78	10·78	110	3·41	1·46	43
V.	Weymouth, Langton Herring.	12·56	6·91	55	3·49	·82	23
,,	Polapit Tamar [Launceston]...	15·08	8·97	59	4·05	·90	22
VI.	Tenbury, Orleton	13·94	7·23	52	4·63	1·44	31
VII.	Boston	9·93	6·89	69	3·43	1·44	42
,,	Hesley Hall [Tickhill]	10·84	6·02	56	3·75	1·22	33
VIII.	Manchester, Plymouth Grove.	13·44	11 22	83	4·06	2·29	56
IX.	Wetherby, Ribston	11·22	6·81	61	3·80	1·19	31
X.	Newcastle, Town Moor.....	11·06	7·98	72	3·58	1·47	41
,,	Seathwaite	57·65	53·60	93	15 75	6 84	43
XI.	Cardiff, Ely	17·15	11·34	66	5·26	1·15	22
,,	Haverfordwest	19·33	9·35	48	4·99	1·22	24
,,	Llandudno	11·79	10·42	88	3·74	1·88	50
XII.	Cargen [Dumfries]	17·42	14·97	86	4·75	2·66	56
,,	Jedburgh, Sunnyside.....	10·53	8·19	78	3·60	1·63	45
XV.	Lochgilphead, Kilmory.....	25·05	26·73	107	6·16	5·26	85
XVI.	Dundee, Eastern Necropolis..	11·68	7·20	62	3·71	1·60	43
XVII.	Braemar	15·51	10·06	65	4·83	2·03	42
XVIII.	Cawdor [Nairn]	11·11	11·19	101	3·27	2·14	65
XXI.	Carlow, Browne's Hill	14·81	9·01	61	4·62	·70	15
,,	Dublin, Fitzwilliam Sq.	11·93	7 85	66	4·05	1·07	26
XXII.	Ballinasloe	15·82	11·46	72	5·03	1·26	25
,,	Crossmolina, Enniscoe	21·84	19·41	89	5·98	3·01	50
XXIII.	Waringstown	14·38	10·94	76	4·86	1·58	33
,,	Londonderry, Creggan Res....	16·36	18·92	116	4·76	4·12	87

For the Scotch and Irish stations the averages work out at 83 per cent. and 80 per cent. respectively, and do not in any instance fall to 60 per cent. of the average.

Turning now to the second portion of the table, containing the results for April and May, we find three stations with less than 20 per cent. of the average, *i.e.*, Carlow, Browne's Hill, 15 per cent., Alton, Ashdell, 17 per cent., and London, Camden Square, 19 per cent. These instances certainly give small totals, but in each case the rainfall exceeded the partial drought limit of ·01 in. per diem, while in 1893 there were dozens of stations at which partial drought lasted for more than 100 days. In connection with this we may mention that we tabulated the absolute and partial droughts for 28 stations well distributed over the three kingdoms, but the results were not of sufficient importance to justify their publication in full, the absolute drought extending to three weeks at only three stations. The partial drought reached or exceeded 50 days at four stations in England and two in Ireland: —

London, Camden Square.....	51	days	ending	June	2nd,	rain	·46 in.
Alton, Ashdell	50	,,	,,	,,	3rd,	,,	·45 ,,
Weymouth, Langton Herring...	51	,,	,,	,,	3rd,	,,	·40 ,,
Launceston, Polapit Tamar ...	52	,,	,,	,,	4th,	,,	·49 ,,
Cork, Wellesley Terrace	64	,,	,,	,,	1st,	,,	·63 ,,
Dublin, Fitzwilliam Square ...	60	,,	,,	,,	15th,	,,	·58 ,,

Of these by far the most remarkable is the 64 days at Cork.

Leaving now results based on geographical distribution to represent the country as a whole, and selecting the individual stations which give the most striking results, we find that out of a little over three hundred returns received, 53, set out in the following table, recorded less than two-tenths of an inch of rain in May, while for April and May together four stations recorded less than half an inch, viz.: Torquay, Cary Green, ·13 in.; Plymouth, ·29 in.; Ashburton, Druid House, ·35 in.; Caher, Duneske, ·43 in.

Total Rainfall in May, 1896.

I.	London, Strand.....	·14	
,,	,, Camden Square...	·14	
,,	,, Randolph Gardns.	·18	
,,	Lea Bridge.....	·19	
II.	Wallington.....	·15	
,,	Hythe	·17	
,,	Sevenoaks, Kemsing	·15	
,,	St. Peter's.....	·08	
,,	Sheppey, Leysdown.....	·12	
III.	Goring.....	·18	
,,	Oxford, Magdalen College.	·19	
IV.	Southend, Water works ...	·19	
V.	Marlborough, Mildenhall..	·19	
,,	Weymouth, Langton Herrg.	·15	
,,	Plymouth	·01	
,,	Torquay, Cary Green.....*	·03	
,,	Ashburton, Holne Vic. ...	·02	
,,	,, Druid House..	·01	
,,	Tavistock, Rose Villa	·09	
,,	PolapitTamar[Launceston]	·07	
,,	Okehampton, Oaklands ...	·07	
,,	Tiverton, St. Peter St.....	·05	
,,	Hartland Abbey	·07	
,,	Barnstaple Athenæum.....	·05	
,,	Lynmouth, Glenthorne ...	·08	
,,	Probus, Lamellyn	·05	
,,	Liskeard, Wadeland Ter..	·04	
V.	Wellington, The Avenue *	·07	
,,	Templecombe, Stowell Rec.	·17	
VI.	Lechlade	·15	
,,	Ross, The Graig	·18	
,,	Stourport, Lincombe Lock	·15	
XI.	Cardiff, Ely	·14	
,,	Treherbert, Tynywaun ...	·13	
,,	Llandovery	·05	
,,	Haverfordwest, High St...	·06	
,,	St. Bride's Bay, Penycwm.	·06	
,,	CastleMalgwyn [Llechryd]	·17	
,,	Tregaron Vicarage	·18	
,,	Builth, Abergwesyn	·11	
,,	Rhayader, Tyrmynydd ...	·13	
,,	,, Nantgwillt	·11	
,,	Lake Vyrnwy	·19	
XX.	Dunmanway, Coolkelure..	·10	
,,	Cork, Wellesley Terrace..*	·14	
,,	,, St. Ann's Hill.....	·14	
,,	Waterville, Iveragh Lodge	·17	
,,	Caher, Duneske .....*	·02	
,,	Ballingarry, Hazelfort.....	·16	
XXI.	Gorey, Courtown House..*	·15	
,,	Carlow, Browne's Hill.....	·12	
,,	Dublin, Fitzwilliam Sq. ...	·19	
XXIII.	Warrenpoint, Sumner Hill.	·17	

* Total Rainfall in April less than ·50 in.

It will be seen that out of the 53 stations in the table, 31 are in Divisions V., VI., and XI., that is, in the S.W. quarter of England and the southern half of Wales, districts for the most part decidedly wet, and where such falls are much more remarkable than they would be in the Eastern Counties, while nine are from southern Ireland, also a wet region.

The longest droughts yielded in these districts are—

		Absolute.	Partial.
V.	Torquay, Cary Green	26 days	75 days.
,,	Ashburton, Druid	22 ,, ...	69 ,,
,,	,, Holne Vicarage	21 ,, ...	67 ,,
,,	Wellington, The Avenue	20 ,, ...	65 ,,
VI.	Lechlade	19 ,, ...	69 ,,
XI.	Haverfordwest	22 ,, ...	51 ,,
,,	St. Bride's Bay, Penycwm	21 ,, ...	51 ,,
XX.	Caher, Duneske	none	66 ,,
,,	Cork, Wellesley Terrace	none	64 ,,

Referring again to 1893, we find partial droughts of 76 days at Torquay, 78 days at St. Austell, 78 days at Ross, Herefordshire, and 73 days at Haverfordwest, showing clearly that in S.W. England and S. Wales the drought was more severe in 1893 than in 1896, but the 1896 drought in the south of Ireland appears to be altogether unprecedented, for we can find no previous record of partial drought in that region prevailing for more than 45 or 46 days.

We conclude with a few notes from our regular correspondents, and one or two extracts from the press :—

Kensington, Edith Road.—Absolute drought for 32 days, April 18th to May 19th. G. VON U. SEARLE.

London, Strand.—From April 18th to June 2nd, rain was registered on only three days—April 30th, ·04 in. ; May 22nd, ·12 in. ; May 23rd, ·02 in. J. H. STEWARD.

Muswell Hill.—The total R of the six months January to June is 6·98 in., being 4·81 in., or over 40 per cent., less than the average. S. G. ABETHELL.

Finchley, Etchingham Park.—From April 17th to June 3rd, 48 days with only ·34 in. of R. J. W. SCOTT.

Dorking, Abinger Hall.—The total rainfall for the half-year is under ten inches, which is very little. G. PAYNE.

Tenterden.—The drought is serious. Absolute drought for 20 days, April 30th to May 19th. Partial drought 57 days, April 5th to May 31st; rainfall ·56 in. Total in May ·21 in., and in April and May ·75 in. June, however, has been the wettest for 34 years, and has given us 3·95 in., chiefly in five heavy falls, viz. : 4th, ·21 in. ; 9th, ·60 in. ; 10th, 1·26 in. ; 24th, 1·10 in. ; 29th, ·40 in. J. ELLIS MACE.

Tunbridge Wells, Camden Park.—Absolute drought for 18 days, between May 1st and 20th, and partial drought for 33 days, with ·33 in. of R between January 27th and March 1st. Rainfall for the first five months of 1896, 5·44 in. ; average for 12 years, 10·28 in. J. WESTON.

Maidstone, Debtling.—My well, 100 feet deep in the chalk, is now (June 4th) lower than I have ever known it at this time of year, having only 9 ft. 6 in. of water in it, while it generally has from 13 ft. to 20 ft. Absolute drought for 17 days, ending May 19th, and partial drought for 29 days, with ·21 in. of R, ending May 31st. R. COOKE.

Sheppey, Leysdown.—Total R for June, 3·13 in., or only ·11 in. less than in the previous five months. A. FARBROTHER.

Slough, Upton.—The R for the half-year (6·23 in.), despite a wet March, is less than half the normal quantity. R. BENTLEY.

Amersham, The Plantation.—Absolute drought for 33 days, from April 18th to May 20th inclusive. G. WELLER.

Plymouth.—Absolute drought occurred from April 25th to May 21st, and in 69 days, ending May 30th, only ·65 in. of R fell. H. VICTOR PRIGG.

Ashburton, Holne Vicarage.—R from January 1st to June 30th only 14·71 in., 7·51 in. less than the average of the corresponding period of the preceding six years. J. GILL.

Clifton, Pembroke Road.—R of the first six months of the year only 6·98 in., being nearly 8·00 in. less than the average of 40 years. R. F. STURGE.

Ross, The Graig.—The rainfall for the five months ending May 31st, 1896, is only 3·84 in., or 7·98 in. less than the average of the ten years 1880-89. The following are the amounts registered in Herefordshire in the first five months of the ten driest years since 1818 :—

1896 3·84 in.	1870 7·23 in.	1854 7·26 in.	1892 7·55 in.	1863 7·72 in.
1893 7·11 ,,	1864 7·23 ,,	1855 7·31 ,,	1832 7·65 ,,	1839 7·72 ,,

Although the fall in 1896 is much less than in 1893, there was in the latter year a period of 73 days with only ·33 in. of R. This year we have had partial drought for 62 days, ending February 29th, and for 50 days, ending June 3rd. H. SOUTHALL.

Rotherby Hall.—Total rainfall for five months, ending May 31st, 1896, 5·11 in., the smallest since 1868, and 3·01 in. less than in the corresponding period of 1895. J. HAMES.

Neston, Hinderton.—Rainfall, January to June, 1896, 11·20 in. Average, January to June, 1869-95, 11·07 in. R. BUSHELL.

Bolton, The Park.—Rainfall of the first six months of 1896, 16·67 in.; average for the same period for ten years, 14·98 in. W. W. MIDGLEY.

Duddon Valley, Ulpha Vicarage.—The R of the six months ending June is in excess of the average by 1·48 in. W. KEWLEY.

Dunmanway, Coolkelure.—A very great scarcity of water in rivers and streams, which are lower than any one can remember them. E. A. SHULDHAM.

Cork, Wellesley Terrace.—The R of the first half of the year is 8·43 in., compared with an average of 18·66 in.; the next smallest fall was 9·57 in. in 1887. There was partial drought for 53 days, ending June 1st. W. MILLER.

SLOUGH.—June 6th.—The drought is very serious. The ponds on the high grounds are dried up, and the cattle have to be watered by carts. Hay will not be half the average, and cherries, plums, damsons, and apples have suffered.—*Daily Mail.*

DEVON.—A remarkable drought is being experienced in Devon and Cornwall, and the water supply of Plymouth and other towns has become so short that even water required for domestic purposes is only turned on for a limited period. With the exception of a slight rainfall at the beginning of last month,

the drought has lasted since the middle of March. No such scarcity of water has been experienced since 1869. The total rainfall for the six months of the present year is less than eight inches. Agriculturists are suffering severely.—*Bristol Times and Mirror*, July 1st.

While dealing with the first six months of 1896, it seems unreasonable to entirely ignore the unusual warmth which accompanied the drought, for although our time is chiefly devoted to rainfall statistics, and we receive practically no systematic temperature records, the observations at Camden Square now extend over nearly 40 years, and we have therefore full details of the temperature of North London.

Taking first the mean shade temp. at 9 a.m., we have—

Average of 30 years, 1861–90...	Jan.	Feb.	Mar.	April.	May.	June.	Six months, Jan.-June.
	38°1	39°7	41°6	48°7	55°0	61°2	47°4
1896	40·3	38·9	45·8	50·2	55·7	64·8	49·3
Difference	+2·2	—·08	+4·2	+1·5	+0·7	+3·6	+1·9

It will be seen that the mean for the six months is 1°·9 above the average, and that only in February was the temperature below the average.

In recent years, 1878, 1884, and 1893 appear to have been the warmest, and we therefore give similar results for those years, from which it will be seen that the mean for the first half of 1896 is half a degree above that of the next warmest year, *i.e.*, 1893 :—

Mean shade temp. at 9 a.m.

	Jan.	Feb.	Mar.	April.	May.	June.	Mean.
1878	39°6	+41°6	—42°3	48°9	56°6	62°8	—48°6
1884	+43·3	+41·6	43·3	—47·0	56·7	—59·8	—48·6
1893	—35 0	40·9	44·2	+50·8	+58·9	62·5	48·7
1896	40·3	—38·9	+45·8	50·2	—55·7	+64·8	+49·3

The + and — indicate respectively the highest and lowest value for each month.

but that in only two months, March and June, was the 1896 value higher than that of the corresponding month in one of the other years, while in February and May the 1896 values are the lowest.

If we take the extreme max. in shade and min. in shade for each of the months, we have—

Absolute shade max. and shade min. in 1896.

	Jan.	Feb.	Mar.	April.	May.	June.
Max.	52°7	55°8	65°2	68°4	78°9	85°1
Min.	28·0	23·2	29·4	32·8	36·1	41·1

Number of times that the shade max. and shade min. have been higher in the 30 *years* 1861–1890.

	Jan.	Feb.	Mar.	April.	May.	June.	Mean.
Max.	21	14	4	17	15	9	13
Min.	4	19	0	4	6	19	9

If the max. and min. had been average values, they should, of course, each have been exceeded 15 times in the 30 years, and the 13 for the max. is very near to this; the 9 for the min. is decidedly low, but not remarkably so.

The conclusion which we draw, and which we think is clearly borne out by the foregoing, is that 1896 has been marked by steady persistence of temperature slightly above the average, and not by periods of exceptionally high temp.

ROYAL METEOROLOGICAL SOCIETY.

The last meeting of this Society for the present session was held on Wednesday evening, June 17th, at the Institution of Civil Engineers, Westminster, Mr. E. Mawley, F.R.H.S., President, in the chair.

Mr. H. Harries read a paper on *Arctic Hail and Thunderstorms*, in which he showed that the commonly accepted opinion that hail and thunderstorms are almost, if not quite, unknown in the arctic regions, is incorrect. The author took the first hundred logs that came to hand, ranging over the greater part of the present century; eight were discarded owing to the letter "h" being used indifferently for hail and for haze; out of the remaining 92, 73, or 79 per cent. contained records of hail. The observations being distributed over all parts of the northern seas visited by ships.

There were in all 296 observations, one-half of which were recorded to the northward of the 66th parallel, but any discussion of the distribution throughout the different months of the year is vitiated by the fact that vessels wintering far north are very few in number, so that there is an almost complete absence of observations from November to February.

As bearing upon the question of the probability of hail in high latitudes, it is significant that not one of the observers expresses surprise indicative of the phenomenon being rare.

Turning to thunderstorms, it will perhaps be expected that the 296 records of hail would be accompanied by as many records of thunderstorms. It may be that the atmosphere was in an electrical condition with each fall of hail, but instead of about 300 observations of thunder or lightning, or both, the total number is only 59, or one-fifth of the number of hail falls. More than half the number occurred in August, but the absence of ships in winter must again be borne in mind.

The observations show that thunderstorms are at least possible in all regions from the Behring Strait, Eastward, to Davis Strait, and the East Greenland Sea.

Mr. R. H. Scott remarked that probably many of the recorded observations of hail were "graupel," and not real hail. Mr. Baldwin Latham asked if anything is known as to the height at which hail is formed, he remembered a severe storm in which he saw the stones

three-quarters of an inch in diameter falling gently on his lawn, and no damage was done, while in the valley, 300 feet below him, every pane of glass was broken. The President, and Messrs. Inwards, Tripp, Marriott and Harding also took part in the discussion.

A paper by Mr. J. E. Cullum on the *Climatology of Valencia Island* was also read. The Observatory at Valencia, which is under the control of the Meteorological Office, is situated on the extreme south-west coast of Ireland, and is almost the most westerly point of Europe. Continuous records from self-recording instruments were carried on from 1869 until 1891, when the observatory was removed to Cahirciveen, and the author gives the results of the observations for those 23 years, dealing with the elements:—

Barometrical Pressure.	Rain.
Temperature.	Snow and Hail.
Vapour Tension.	Thunder.
Relative Humidity.	Fog.

Sunshine.

The paper being practically a summary of results, is incapable of sufficient condensation to give an adequate idea of it in these pages.

The President remarked on the very equable character of the records, and thought that greater range would have been shown by ordinary instruments exposed in the usual manner.

Mr. Balwin Latham asked if the results of the recording instruments had been compared with readings in the Stevenson screen which he saw in one of the photographs of the station.

Mr. F. C. Bayard thought that a comparison of the records at Belmullet in the N.W. of Ireland, with those at Valencia in the S.W., would be very interesting.

Mr. F. J. Brodie regretted that there was no discussion of the wind records, or of the distribution of gales throughout the year, and no attempt to correlate the results for the different elements. He noticed that thunderstorms were most frequent in winter, while in England they were most common in summer. The range of total annual rainfall, from 69 inches to 44 inches, struck him as very small, for in London the range in the same period was from 32 inches to 17 inches.

Mr. Sowerby Wallis considered the small variation of the rainfall very remarkable, for it is almost axiomatic that in England the rainfall of the wettest year will be roughly twice that of the driest year, and an exhaustive paper read by Mr. A. R. Binnie, C.E., before the Institution of Civil Engineers, in 1892, showed that the same rule held good for the greater part of the world.

Mr. R. H. Scott explained that the paper was entirely a discussion of the results from the self-recording instruments, and said that the comparison of the records at Valencia and Belmullet referred to by Mr. Bayard, would soon be possible, as the observations at the latter station had been worked up and would shortly be issued.

CLIMATOLOGICAL TABLE FOR THE BRITISH EMPIRE, JANUARY, 1896.

STATIONS. (*Those in italics are South of the Equator.*)	Absolute. Maximum. Temp.	Absolute. Maximum. Date.	Absolute. Minimum. Temp.	Absolute. Minimum. Date.	Average. Max.	Average. Min.	Average. Dew Point.	Average. Humidity.	Absolute. Max. in Sun.	Absolute. Min. on Grass.	TotalRain. Depth.	TotalRain. Days.	Aver. Cloud.
	°		°		°	°	°	0-100	°	°	inches		
England, London	52·7	17	28·0	20	45·4	36·5	37·8	89	72·6	24·3	·78	9	8·1
Malta	64·0	1	40·1	21	58·3	48·0	41·5	75	114·4	33·0	3·05	15	6·2
Mauritius	84·5	30	68·7	27	82·8	73·1	69·7	79	134·8	62·2	8·92	18	6·2
Calcutta	82·9	16	47·5	11	78·4	53·5	50·6	60	135·8	38·7	·03	1	3·4
Bombay	88·7	2	65·8	19	84·0	69·7	65·2	68	134·9	53·2	·00	0	0·2
Ceylon, Colombo	90·5	25	69·5	13	87·8	72·7	68·7	73	152·0	65·0	2·92	8	6·1
Melbourne	108 0	23	45·4	30	80·0	57·2	53·0	61	155·0	35·1	2·61	10	4·9
Adelaide	111·2	23	52·5	29	86·9	62·9	52·0	45	172·0	41·5	1·52	7	4·8
Sydney	108·5	13	63·2	30	84·5	68·2	62·0	70	160·9	52·3	1·66	11	5·2
Wellington	77·0	16	45·5	21	70·5	57·5	52·6	66	141·0	35·0	2·09	11	4·2
Auckland	83·0	30	53·0	21	73·7	60·0	56·8	71	144·0	50·0	·87	12	5·6
Jamaica, Kingston	89·5	3	62·7	15	84·6	67·5	65·2	76	...	...	1·51	7	3·0
Trinidad	88·0	10*a*	63·0	27	85·8	67·5	69·3	80	166·0	62·0	7·08	11	...
Grenada	85·4	30	69·2	24	81·8	72·0	68·7	79	155·8	...	4·35	15	2·3
Toronto	37·4	2	—10·5	6	27·9	15·4	20·0	84	53·5	—15·5	3·93	13	8·3
New Brunswick, Fredericton	37·9	3	—16·3	6	21·2	4·0	7·7	72	...	...	1·36	8	5·7
Manitoba, Winnipeg	34·8	10	—45·2	4	9·4	—16·8	...	...	...	...	1·03	14	5·2
British Columbia, Esquimalt	55·1	7	20·6	2	43·0	34·2	37·1	93	...	...	8·23	20	7·9

a—and 11, 13.

REMARKS.

MALTA.—Adopted mean temp. 52°·1, 0°·8 below the average. Mean hourly velocity of wind 12·4 miles. Average temp. of sea 59°·6. Thunderstorms on 25th and 26th. J. F. DOBSON.

Mauritius.—Mean temp. of air 0°·9 below, of dew point 0°·1 below, and rainfall 1·59 in. above, their respective averages. Mean hourly velocity of wind 10·2 miles, or 1·1 mile below average; extremes, 26·0 on 24th, and 0·0 on 11th; prevailing direction, E.S.E. to E. by N. Lightning on 16th, 19th, and 30th, and thunder on 31st. C. MELDRUM, F.R.S.

CEYLON, COLOMBO.—Thunderstorms occurred on the 8th. D. G. MANTELL

Melbourne.—Max. temp. in shade (108°·0 on 23rd) the highest recorded since January 19th, 1882. P. BARRACHI.

Adelaide.—Mean temp. 0°·5 above the average of 39 years; rainfall ·69 in. above the average. C. TODD, F.R.S.

Sydney.—The hottest January on record, and the 13th the hottest day in Sydney on record, and at the same time the most persistent heat. Mean temp. 4°·9 above, humidity 2·5 below, and rainfall 2·03 in. below, their respective agerages. H. C. RUSSELL, F.R.S.

Wellington.—Very strong winds from N.W. throughout the month, with occasional rain, but a small total fall. Thunder on 4th, 7th, and 8th; fog on 25th and 26th. Mean temp. 1°·4 above, and rainfall 1·82 in. below, the average. R. B. GORE.

Auckland.—A remarkably dry month, the total rainfall being hardly one-third of the average. Mean temp. slightly below the average. T. F. CHEESEMAN.

JAMAICA, KINGSTON.—In Kingston the weather was fine, with rainfall about the average. Mean hourly velocity of wind 3·6 miles. Rainfall of the Island one-fourth above the average. R. JOHNSTONE.

TRINIDAD.—Rainfall 4·14 in. above the average of 30 years. J. H. HART.

SUPPLEMENTARY TABLE OF RAINFALL, JUNE, 1896.

[For the Counties, Latitudes, and Longitudes of most of these Stations, see *Met. Mag.*, Vol. XIV., pp. 10 & 11.]

Div.	STATION.	Total Rain.	Div.	STATION.	Total Rain.
		in.			in.
II.	Dorking, Abinger Hall .	3 69	XI.	Lake Vyrnwy	2·37
,,	Birchington, Thor	3·76	,,	Corwen, Rhug	2·33
,,	Hailsham	3·86	,,	Carnarvon, Cocksidia ...	...
,,	Ryde, Thornbrough	2·45	,,	I. of Man, Douglas	3·19
,,	Emsworth, Redlands ...	1·77	XII.	Stoneykirk, Ardwell Ho.	4·34
,,	Alton, Ashdell	3·92	,,	New Galloway, Glenlee	3·69
III.	Oxford, Magdalen Col..	2·44	,,	Lilliesleaf, Riddell	2·28
,,	Banbury, Bloxham	2·40	XIII.	N. Esk Res. [Penicuick]	3·75
,,	Northampton, Sedgebrook	2·56	,,	Edinburgh, Blacket Pl..	3·57
,,	Alconbury	1·10	XIV.	Glasgow, Queen's Park..	4·07
,,	Wisbech, Bank House...	2·16	XV.	Inverary, Newtown	4·43
IV.	Southend	2·78	,,	Oban, The Corran	...
,,	Harlow, Sheering..... ...	2·86	,,	Islay, Gruinart Schools..	3·06
,,	Colchester, Lexden	2·01	XVI.	Dollar.....	3·88
,,	Rendlesham Hall	1·67	,,	Balquhidder, Stronvar...	5·59
,,	Diss	...	,,	Ballinluig	3·42
,,	Swaffham	2·18	,,	Dalnaspidal H.R.S.....	4·65
V.	Salisbury, Alderbury ...	1·90	XVII.	Keith H.R.S.....	3·00
,,	Bishop's Cannings	1·55	,,	Forres H.R.S.	3·13
,,	Blandford, Whatcombe .	2·44	XVIII.	Fearn, Lower Pitkerrie..	3·36
,,	Ashburton, Holne Vic...	3·22	,,	N. Uist, Loch Maddy ...	4·18
,,	Okehampton, Oaklands.	2·15	,,	Invergarry.....	3·25
,,	Hartland Abbey	1·73	,,	Aviemore H.R.S.	3·35
,,	Lynmouth, Glenthorne.	2·79	,,	Loch Ness, Drumnadrochit	3·55
,,	Probus, Lamellyn	1·24	XIX.	Invershin	3·37
,,	Wellington, The Avenue	2·83	,,	Scourie	3·98
,,	Wincanton, Stowell Rec.	1·97	,,	Watten H.R.S.....	2·46
VI.	Clifton, Pembroke Road	1·33	XX.	Dunmanway, Coolkelure	4·16
,,	Ross, The Graig	2·19	,,	Cork, Wellesley Terrace	2·17
,,	Wem, Clive Vicarage ...	1·90	,,	Killarney, Woodlawn ...	2 84
,,	Cheadle, The Heath Ho.	3·09	,,	Caher, Duneske	2·03
,,	Worcester, Diglis Lock	1·69	,,	Ballingarry, Hazelfort...	2·12
,,	Coventry, Coundon	2·72	,,	Limerick, Kilcornan ...	1·75
VII.	Ketton Hall [Stamford]	2·52	,,	Ennis.....	...
,,	Grantham, Stainby	2·99	,,	Miltown Malbay	3·01
,,	Horncastle, Bucknall ...	1·91	XXI.	Gorey, Courtown House	1.45
,,	Worksop, Hodsck Priory	4·22	,,	Athlone, Twyford	2·24
VIII.	Neston, Hinderton	4·13	,,	Mullingar, Belvedere ...	2·53
,,	Southport, Hesketh Park	1·98	,,	Longford, Currygrane...	2·99
,,	Broughton-in-Furness ...	4·20	XXII.	Woodlawn	3·36
IX.	Ripon, Mickley.....	3·30	,,	Crossmolina, Enniscoe ..	4·68
,,	Melmerby, Baldersby ...	2·86	,,	Collooney, Markree Obs.	3·46
,,	Scarborough, Obs.	1·46	,,	Ballinamore, Lawderdale	4·32
,,	Middleton, Mickleton ...	3·54	XXIII.	Lough Sheelin, Arley...	4·27
X.	Haltwhistle, Unthank...	2·35	,,	Warrenpoint.....	3·51
,,	Bamburgh	1·26	,,	Seaforde.....	3·73
,,	Keswick, The Bank.....	3·91	,,	Belfast, Springfield	3·67
XI.	Llanfrechfa Grange	2·51	,,	Bushmills, Dundarave..	2·99
,,	Llandovery	2·80	,,	Stewartstown	3·80
,,	Castle Malgwyn	1·05	,,	Killybegs	4·02
,,	Builth, Abergwesyn Vic.	2·72	,,	Lough Swilly, Carrablagh	3·64
,,	Rhayader, Nantgwillt...	2·12			

JUNE, 1896.

Div.		STATIONS. [The Roman numerals denote the division of the Annual Tables to which each station belongs.]	RAINFALL. Total Fall.	Difference from average 1880-9.	Greatest Fall in 24 hours. Dpth	Date	Days on which ·01 or more fell.	TEMPERATURE. Max. Deg.	Date	Min. Deg.	Date.	No. of Nights below 32°. In shade.	On grass.
			inches.	inches.	in.								
I.	ENGLAND.	London (Camden Square) ...	2·27	+ ·26	·70	3	11	85·1	15	41·1	1	0	0
II.		Maidstone (Hunton Court)...	3·72	+ 2·10	1·42	10	9	...	...	...	...	...	...
,,		Strathfieldsaye	2·95	...	1·62	10	14	...	...	...	...	...	...
III.		Hitchin	1·59	— ·27	·46	10	10	84·0	15	44·0	1	0	...
,,		Winslow (Addington)	2·15	+ ·29	·54	7	14	85·0	16	39·0	1	0	...
IV.		Bury St. Edmunds (Westley)	3·20	+ 1·41	·94	10	10	76·0	15	44·0	1	0	...
,,		Norwich (Brundall)	2·24	...	·89	9	8	81·0	16	36·8	1	0	1
V.		Weymouth(LangtonHerring)	1·91	— ·32	·54	8	9	79·0	14	47·0	1	0	...
,,		Torquay (Cary Green)	1·97	...	·41	8	12	78·8	8	46·8	1	0	0
,,		Polapit Tamar [Launceston]..	1·49	— ·72	·29	15*a*	14	83·0	15	41·3	1	0	...
VI.		Stroud (Upfield)	2·80	+ ·41	·68	5	14	83·0	15*a*	52·0	29	0	...
,,		ChurchStretton(Woolstaston)	1·96	— ·59	·56	3	14	80·0	15	46·0	1	0	0
,,		Tenbury (Orleton)	1·64	— ·97	·46	7	13	85·5	16	42·5	22	0	0
VII.		Leicester (Barkby)	2·05	— ·30	·38	24	14	88·0	16	39·0	21	0	0
,,		Boston	1·84	— ·05	·45	16*b*	9	86·0	13	45·0	1	0	...
,,		Hesley Hall [Tickhill].....	2·01	+ ·09	·63	4	12	86·0	16	53·0	7	0	...
VIII.		Manchester(PlymouthGrove)	2·50	— ·15	·40	8	15	89·0	15	47·0	21	0	...
IX.		Wetherby (Ribston Hall) ..	2·87	+ ·98	·65	8	10	...	...	...	...	...	...
,,		Skipton (Arncliffe)	4·07	+ ·71	·95	4	12	..	...	...	...	...	...
,,		Hull (Pearson Park).	2·83	+ 1·08	1·29	4	13	80·0	13*a*	...	...	...	...
X.		Newcastle (Town Moor)	2·08	+ ·44	·61	6	16	...	...	...	...	...	...
,,		Borrowdale (Seathwaite).....	6·50	— ·08	1·19	30	18	...	...	...	...	...	...
XI.	WALES.	Cardiff (Ely).....	2·64	+ ·21	·67	7	11	...	...	...	...	...	...
,,		Haverfordwest	1·46	— 1·10	·59	16	13	86·1	15	39·7	1	0	1
,,		Aberystwith (Gogerddan) ...	2·20	...	·34	8	13	88·0	15	35·0	1	0	...
,,		Llandudno.....	2·17	+ ·40	·60	4	16	80·0	15	44·8	1	0	...
XII.	SCOTLAND.	Cargen [Dumfries]	3·44	+ 1·49	·94	4	12	82·6	14	37·0	1	0	...
,,		Jedburgh (Sunnyside).....	1·90	+ ·16	·65	4	12	86·0	15	38·0	1	0	...
XIV.		Colmonell	4·28	...	·76	4	15	89·0	14	40·0	8	0	...
XV.		Lochgilphead (Kilmory).....	3·75	+ ·65	·85	4	18	...	...	41·0	21	0	...
,,		Mull (Quinish).....	4·82	+ 1·53	·70	19	22	...	...	...	...	...	...
XVI.		Loch Leven Sluices	3·50	+ 1·75	·80	5	14	...	...	...	...	...	...
,,		Dundee (Eastern Necropolis)	2·65	+ 1·15	·40	17	21	78·0	27	42·0	1	0	...
XVII.		Braemar	3·01	+ 1·02	·65	7	19	76·2	15	39·2	26	0	...
,,		Aberdeen (Cranford)	3·00	...	·50	5	22	75·0	27	42·0	20	0	..
XVIII		Strathconan [Beauly]	5·03	+ 2·54	·93	22	16	...	...	...	...	...	...
,,		Glencarron Lodge.....	7·20	...	1·10	19	23	74·1	15	41·4	5	0	...
,,		Cawdor	4·49	+ 3·09	·70	10	24	...	...	...	...	..	...
XIX.		Dunrobin	4·16	+ 2·14	·88	10	16	71·0	27	44 0	6	0	...
,,		S. Ronaldsay (Roeberry).....	2·89	+ 1·13	·81	29	17	68·0	27	43·0	3, 4*d*	0	...
XX.	IRELAND.	Darrynane Abbey.....	2 30	...	·69	15	20	...	...	...	...	...	...
,,		Waterford (Brook Lodge) ...	1·93	— ·14	·82	16	10	82·0	15	44·0	4, 5,	0	...
,,		O'Briensbridge (Ross)	2·45	...	·51	15	15	..	...	...	...	...	...
XXI.		Carlow (Browne's Hill)	2·23	+ ·39	·86	16	10	...	..	...	...	...	...
,,		Dublin (FitzWilliam Square)	1·88	+ ·22	·70	16	14	80·8	15	49·1	1	0	0
XXII.		Ballinasloe	2·61	+ ·31	·41	3	17	78·0	14	43·0	26	0	...
,,		Clifden (Kylemore)	4·23	...	·62	22	21	...	...	...	...	..	...
XXIII		Waringstown	2·54	+ ·47	·57	16	13	88·0	14	40·0	6, 9	0	...
,,		Londonderry (Creggan Res.).	3·97	+ 1·55	·71	16	23	...	...	...	...	...	...
,,		Omagh (Edenfel)	3·39	+ ·92	·92	16	20	79·0	14*c*	42 0	18*e*	0	...

+Shows that the fall was above the average ; —that it was below it.

a—and 16. *b*—and 23. *c*—and 15. *d*—and 5. *e*—and 25.

METEOROLOGICAL NOTES ON JUNE, 1896.

ABBREVIATIONS.—Bar. for Barometer; Ther. for Thermometer; Max. for Maximum; Min. for Minimum; T for Thunder; L for Lightning; T S for Thunderstorm; R for Rain; H for Hail; S for Snow.

ENGLAND.

STRATHFIELDSAYE.—Severe TS with 1·62 in. of R on 10th, but no damage done.

ADDINGTON.—Thunder was rather frequent in the early part of the month, but at no time heavy. Very hot on the 15th and 16th, followed by a great fall of temp. on the 17th, there being a difference of 18° between the max. temp. of the 16th and 17th. There was a good deal of very fine weather during the month with a good rainfall, but R was much needed at the close.

BURY ST. EDMUNDS, WESTLEY.—A favourable month for agriculture. Max. temp. below 60° on only 3 days. The storms were very partial, many places wanting rain. TSS on 3rd, 6th, 9th and 24th, distant T on the 4th.

NORWICH, BRUNDALL.—The warmest June since 1877; mean temp. 61°·7. A great many very fine days. The heavy rain of the 10th was much appreciated after the long-continued dryness. L in evenings of 2nd, 5th and 6th. T on 23rd and 24th. TSS and heavy R on 10th.

WEYMOUTH, LANGTON HERRING.—Mean 9 a.m. temp. 62°·6, or 2°·3 above the average, with the exception of 1878, when it was 63°·6, the highest for 25 years; TSS on the 4th and 26th, and distant T on the 14th and 15th, which were very hot days. Solar halo on the 12th, and fog on the 16th. Rainfall for the six months ending July 1st 6·91 in., or only 55 per cent. of the average; with the exception of 1892, the smallest fall for the first six months of the year since 1875.

TORQUAY, CARY GREEN.—R ·31 in. below the averege. Mean temp. 61°·3, or 2°·5 above the average. Duration of sunshine 265 hours 45 minutes, being 33 hours 10 minutes above the average; no sunless day.

POLAPIT TAMAR [LAUNCESTON].—The month began with much needed R and cloudy weather, but the middle and end were very hot and dry, with the wind blowing steadily from N. and N.W. A bright and dry month with very little T or heavy rain. The grass min. fell to 39°·0 on 22nd.

STROUD, UPFIELD.—Heavy storm, with T from 1.30 to 2.30 p.m., and with T and vivid L from 3.30 to 4.30 p.m. on 5th A man killed under a tree, two miles from here.

WOOLSTASTON.—A very hot month. The long drought broke up on the 2nd, but too late to save the hay crop, which is very scanty. T and L on 3rd. Mean temp. 61°·2.

TENBURY, ORLETON.—A very warm, dry month; the warmest June recorded here in 35 years, the mean temp. being more than 4°·5 above the average, and 0°·8 above that of June, 1868. The R of the first six months of the year is 7·21 in., or just one-half of the usual quantity, and less than in any other year since the record was started. T on the 3rd and 25th.

LEICESTER, BARKBY.—T and L on 6th and 7th, T on 2nd, 3rd, 4th, 15th, 16th, 17th, 24th and 30th.

HULL, PEARSON PARK.—TSS on 2nd, 4th, 6th, 8th and 20th. H on 6th.

SEATHWAITE.—Very hot on the 4th, with T and L and heavy R at 4 p.m. T and L from 10 a.m. to 5 p.m. on 6th.

WALES.

HAVERFORDWEST.—Although R was measured on 13 days, still the month must be reckoned as another of disastrous drought. The falls of R were so small (except on the 4th and 15th) and the sunshine and high temp. so much

above the average for June, that they completely neutralized the rainfall. The total fall from the 1st January up to the end of this month, has only amounted to 9 40 in., beating the record of all former years since 1849. This is certainly one of the most unfortunate seasons on record in this county. The month ended with boisterous winds and lower temperature.

ABERYSTWITH, GOGERDDAN.—Bright sunshine throughout the month; wind mostly from S. and S.W.

SCOTLAND.

CARGEN [DUMFRIES].—The mean temp. of the month is 2°·7 above the average, and has only twice during the last 37 years been slightly exceeded, viz., in 1865 and 1893. This high mean temp. has been reached notwithstanding a spell of cool east winds during the first ten days of the month. The rainfall is unusually heavy for June, but the total for the first six months of the year is more than 3·50 in. below the average. T and L on 1st, 8th and 11th. With the exception of a W. breeze, very strong for this season, on 30th, and a fairly stiff blow from N.W. on 21st, winds have been unusually light. Crops generally look well, and are in a very advanced state.

JEDBURGH.—The temp. of the month has been much higher than in the June of 1895, and vegetation has progressed greatly. Flowers are fully a fortnight earlier this year. Tree and bush fruits are good crops, and grain crops look well, but there is now a want of rain, and pastures are getting bare in consequence.

COLMONELL.—Rainfall 1·60 in. above the average of 20 years. Mean temp. 60°·1, or 3°·4 above the average.

BRAEMAR.—A most excellent month; luxuriant growth, and roses in full bloom one month earlier than usual in this district.

ABERDEEN, CRANFORD.—Cold and wet with very little sunshine. Heavy thunder-shower on 19th, ·25 in. falling in 7 minutes.

S. RONALDSAY, ROEBERRY.—A wet month. Mean temp. 52°·4, slightly above the average.

IRELAND.

DARRYNANE ABBEY.—A very warm month.

O'BRIENSBRIDGE, ROSS.—June proved an average good month, with a lower temp. than May. The last day of the month was the coldest since March, with strong S.W. wind.

DUBLIN.—A very favourable, warm, summer-like month. It is true that the R and rainy days equalled, or slightly exceeded, the average but 78 per cent. of the total precipitation occurred on 3 days, leaving only 22 per cent. to be distributed over the remaining 11 rainy days. The month, therefore, was showery rather than wet. The heat on the 15th was very unusual for June in Ireland. The amount of cloud was large for so fine a month, and the strength and persistency of the N.W. winds of the closing period are noteworthy. Mean temp. 61°·4, or 3°·6 above the average. High winds on 7 days, but the force of a gale was attained only on the 30th. Temp. reached or exceeded 70° in the screen on 9 days. TS and H on the 24th, and T on the 18th.

OMAGH, EDENFEL.—On the whole a very favourable month. The rainfall of the first week, followed by a brilliant spell of hot weather till the 15th, stimulated into further luxuriance the already fine promise of all vegetation; the rainy and broken weather of the latter half of the month, however, greatly added to the difficulty of saving the heaviest hay crop known for years.